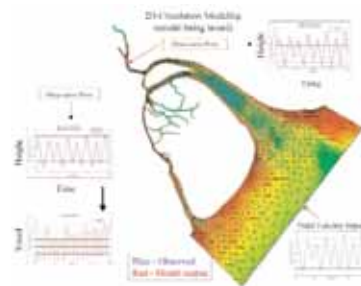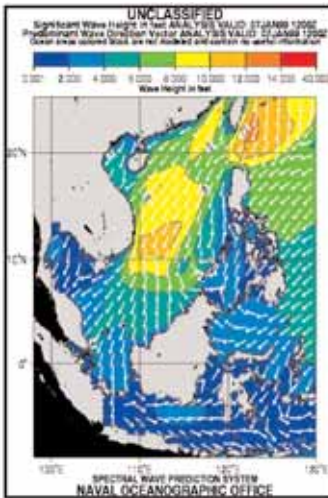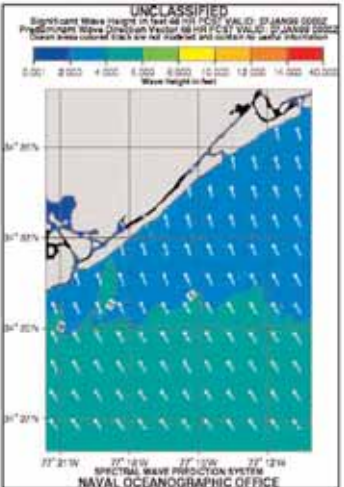## Ocean Modeling

NAVOCEANO provides operational oceanographic support to the Fleet through tailored analysis, real-time data, climatological products and operational ocean models.

Global Models		
Navy Layered Ocean Model (NLOM)	· Global coverage · 1/16-degree resolution · Seaward of 200-m depth · Six vertical layers · Forecasts front and eddy positions daily from 0 to 48 hours · Forecasts layered sea surface temperature (SST) and sea surface height (SSH)	
Global Navy Coastal Ocean Model (G-NCOM)	· 1/8-degree resolution · 42 vertical layers · Will provide boundary conditions for higher resolution nests · Assimilates NLOM SSH · Underwent validation testing in fall 2003 · Forecasts 3D temperature, salinity and current structure from 0 to 96 hours	

Regional Models		
Shallow-Water Analysis and Forecast System (SWAFS)	· 3D coastal circulation model · Based on Princeton Ocean Model (POM) · Resolution varies by region (1/2 to 24 km) · Assimilates observations from satellite (SST, SSH) and in situ (Expendable Bathythermograph (XBT); Conductivity, Temperature, and Depth (CTD); and profiling float) · Forced by tides and Fleet Numerical Meteorology and Oceanography Center (FLENUMMETOCCEN) winds and fluxes · Provides daily 3D forecasts of currents, tides, temperature, salinity from 0 to 48 hours	

Modular Ocean Data Assimilation System (MODAS)	· Statistical analysis model for:
	  - Temperature
	  - Salinity
	  - Derived quantities (sound speed, etc.)
	· Relocatable, variable resolution
	· Uses Optimum Interpolation schemes to combine:
	  - Satellite-Derived Sea Surface Altimetry
	  - Gridded climatology (temperature, salinity)
	  - Near-real-time XBT, CTD, float and buoy data
	· Provides 3D temperature and salinity grids
	  - Is used for acoustic prediction models
	  - Is foundation for MODAS, run at Naval Meteorology and Oceanography Command regional centers and deployed Navy ships.
	  - Provides initialization fields for 3D models	

	Local Models	
2D Tidal Elevation/ Circulation Models	· RMA-2—Riverine and estuary model · ADCIRC—Coastal circulation model · WQMAP—Estuarine and coastal circulation model · PC-Tides—Coastal and small basin tidal model · Delft3D—Integrated nearshore circulation, wave and surf modeling system · Relocatable models with high-resolution domains that are implemented as needed.	
Wave Model (WAM)	· Area coverage - Globally relocatable - Currently running many domains - Relocatable, variable resolution (1/4 to 1/12 degree) · Deep water wave model (> 20m) · Analysis and forecasts to 48/72 hours (twice daily) · Surface wind forcing using FNMOC's Navy Operational Global Atmospheric Prediction System (NOGAPS) and Coupled Ocean/Atmosphere Mesoscale Prediction System (COAMPS) models · Produces graphics and gridded set of wave parameters - Predominant wave direction - Significant wave height - Swell direction, period, and height - Wind wave height - Average wave period	
Steady-State Spectral Wave Model (STWAVE)	· Area coverage: Several areas running-typically ~25 km alongcoast · Relocatable, variable resolution (100 to 400 m) · Shallow water model (< 20 m) · Surface wind forcing using FNMOC's NOGAPS and COAMPS models · Gridded set of wave parameters forecast from 0 to 48 hours (twice daily) - Predominant wave direction - Significant wave height - Peak wave period · Deep water input provided by WAM	

For more information, please contact NAVOCEANO Public Affairs at 228.688.5649
or visit https://www.navo.navy.mil.